IN THE CLAIMS:

1. (original) A method for allocating resources of one or more programmable logic devices (PLDs) to a plurality of functions in a system having one or more PLDs on which the functions are implemented, comprising:

monitoring activity levels of the functions;

detecting when the activity level of a first function is decreasing;

selecting a subset of PLD resources that implement the first function;

selecting a configuration bitstream for implementing a second function; and

reconfiguring the subset of PLD resources implementing the first function with the configuration bitstream of the second function.

2. (original) The method of claim 1, further comprising periodically sampling the activity levels of the functions.

3. (original) The method of claim 2, further comprising determining whether the activity level of the first function is decreasing after the steps of sampling the activity levels of the functions a selected number of times.

4. (original) The method of claim 1, further comprising:

detecting when the activity levels of the second and a third function are increasing;

allocating the subset of PLD resources between the second and third functions in proportion to a ratio of increasing activity levels between the second and third functions;

selecting a configuration bitstream for implementing a third function, wherein the configuration bitstreams for implementing the second and third functions proportionally

allocate the subset of PLD resources in proportion to the ratio of increasing activity levels; and

reconfiguring the subset of PLD resources with the configuration bitstreams of the second and third function.

5. (original) The method of claim 1, further comprising:

wherein the subset of PLD resources implementing the first function is reconfigured with the configuration bitstream of the second function only if the activity level of the second function is increasing; and

if none of the functions have increasing activity levels, then reconfiguring the subset of PLD resources with a predetermined configuration bitstream and adding the subset of PLD resources to a reserve of PLD resources.

6. (original) The method of claim 5, further comprising, if none of the functions have decreasing activity levels, then detecting whether any of the functions have increasing activity levels, and for functions having increasing activity levels, allocating a subset of PLD resources from the reserve of PLD resources to the functions having increasing activity levels and reconfiguring the subset of PLD resources from the reserve of PLD resources with configuration bitstreams that implement the functions having increasing activity levels.

7. (original) The method of claim 6, wherein the configuration bitstreams for implementing the functions having increasing activity levels proportionally allocate the subset of PLD resources from the reserve in proportion to a ratio of increasing activity levels.

8. (withdrawn) A method for allocating resources of one or more programmable logic devices (PLDs) to a plurality of

functions in a system having one or more PLDs on which the functions are implemented, comprising:

allocating a first portion of total PLD resources to a reserve of PLD resources and a second portion of PLD resources to the plurality of functions;

configuring the second portion of PLD resources with configuration bitstreams that implement the plurality of functions, wherein the second portion of PLD resources are allocated between the functions in a selected ratio;

monitoring activity levels of the functions; and

if the activity level of a first function is decreasing and the activity levels of one or more other functions are increasing, then selecting a subset of PLD resources that implement the first function and reconfiguring the subset of PLD resources with one or more configuration bitstreams that implement the one or more other functions, wherein the configuration bitstreams for implementing the functions having increasing activity levels proportionally allocate the subset of PLD resources from the first function in proportion to a ratio of increasing activity levels.

9. (withdrawn) The method of claim 8, further comprising:

if none of the functions has a decreasing activity level and the activity levels of one or more other functions are increasing, then selecting a subset of PLD resources from the reserve of PLD resources and reconfiguring the subset of PLD resources from the reserve with one or more configuration bitstreams that implement the one or more other functions, wherein the configuration bitstreams for implementing the functions having increasing activity levels proportionally allocate the subset of PLD resources from the reserve in proportion to a ratio of increasing activity levels.

10. (withdrawn) The method of claim 9, further comprising:

periodically sampling the activity levels of the functions; and

wherein the activity level of the first function is considered to be decreasing if sampled activity levels over a selected period of time are less than a selected threshold.

11. (withdrawn) The method of claim 10, wherein the activity level of a function is considered to be increasing if sampled activity levels over a selected period of time are greater than a selected threshold.

12. (withdrawn) The method of claim 8, further comprising:

periodically sampling the activity levels of the functions; and

wherein the activity level of the first function is considered to be decreasing if sampled activity levels over a selected period of time are less than a selected threshold.

13. (withdrawn) A reconfigurable system comprising:

a plurality of programmable logic devices (PLDs);

a storage element coupled to the PLDs and having stored therein a plurality of configuration bitstreams, wherein each configuration bitstream implements a different function;

a load monitor coupled to the PLDs, wherein the load monitor is configured and arranged to monitor respective activity levels of the functions implemented on the PLDs, select a subset of PLD resources for reconfiguration, and generate allocation signals for reconfiguring the subset of PLD resources proportional to the respective activity levels; and

a configuration control element coupled to the load monitor, the PLDs, and the storage element, the configuration control element configured and arranged to reconfigure the PLDs with the configuration bitstreams responsive to the allocation signals.

14. (original) An apparatus for allocating resources of one or more programmable logic devices (PLDs) to a plurality of functions in a system having one or more PLDs on which the functions are implemented, comprising:

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means for monitoring activity levels of the functions;

means for detecting when the activity level of a first function is decreasing;

means for selecting a subset of PLD resources that implement the first function;

means for selecting a configuration bitstream for implementing a second function; and

means for reconfiguring the subset of PLD resources implementing the first function with the configuration bitstream of the second function.

15. (new) A method for allocating resources of one or more programmable logic devices (PLDs) to a plurality of functions in a system having one or more PLDs on which the functions are implemented, comprising:

monitoring activity levels of the functions; and

selectively reconfiguring selected resources of the PLDs in response to activity levels of the functions.

16. (new) The method of claim 15, further comprising periodically sampling the activity levels of the functions.

17. (new) The method of claim 16, further comprising determining whether the activity level of a function is

decreasing after the steps of sampling the activity levels of the functions a selected number of times.

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18. (new) The method of claim 15, further comprising:

allocating a subset of PLD resources between functions in proportion to a ratio of increasing activity levels between the functions;

selecting one or more configuration bitstreams that proportionally allocate the subset of PLD resources in proportion to the ratio of increasing activity levels; and

reconfiguring the subset of PLD resources with the one or more configuration bitstreams.